August 17, 2006

Mr. Janzing, M.,
European Patent Office,
P.B. 5818, Patentlaan 2,
NL-2280 HV Rijswik – Pays Bas.
The Netherlands

BY FAX & REGD. MAIL
FAX NO. : 00 31 70 340 3016
TOTAL PAGES : ( )

Dear Sir,

Subject: Your Notification of Transmittal of the International Preliminary Report on Patentability dated 17.07.2006 in the matter of **PCT/IN2004/000142** entitled "AN IMPROVED PROCESS FOR PRODUCING CHLORINATED SUCROSE". applicant Pharmed Medicare Pvt. Ltd., Pharmed House, 141, Walchand Hirachand Marg, Mumbai 400 001 Maharashtra, India.

In the matter of above subject, we are writing you on behalf of the applicant Pharmed Medicare Pvt. Ltd. as their agents.

We thank you very much for sending us the International Preliminary Examination Report on Patentability mentioned above.

However, we did not receive even a single written opinion prior to the final report on International Preliminary Examination Report on Patentability although about 7 months were available after we submitted the Demand for International Preliminary Examination Report. This has resulted in loss of opportunity to the applicant to argue regarding some reasons provided by the Hon. Authorized officer and to make an amendment in claim by taking into consideration views expressed by the Hon. Authorized Officer.

We request to invite your kind attention to following provisions of PCT and regulations, the benefit of which was not received by the applicant:

1. Article 34 (2) (c) ("The applicant shall receive at least one written opinion from the International Preliminary Examining Authority---") and
2. Rule 66.2 of the PCT provided that " (a) If the International Preliminary Examining Authority, (i) ------, (ii) considers that the international preliminary examination report should be negative in respect of any of the claims because the invention claimed therein does not appear to be novel, does not appear to involve an inventive step (does not appear to be non-obvious), or does not appear to be industrially applicable, ---------- the

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said Authority shall notify the applicant accordingly in writing. ------- (b) The notification shall fully state the reasons for the opinion of the International Preliminary Examining Authority.(c) The notification shall invite the applicant to submit a written reply together, where appropriate, with amendments. (d) The notification shall fix a time limit for the reply. The time limit shall be reasonable under the circumstances. It shall normally be two months after the date of notification. In no case shall it be shorter than one month after the said date. It shall be at least two months after the said date where the international search report is transmitted at the same time as the notification. It shall, subject to paragraph (e), not be more than three months after the said date. (e) The time limit for replying to the notification may be extended if the applicant so requests before its expiration.66.3 *Formal Response to the International Preliminary Examining Authority* (a) The applicant may respond to the invitation referred to in Rule 66.2(c) of the International Preliminary Examining Authority by making amendments or—if he disagrees with the opinion of that Authority—by submitting arguments, as the case may be, or do both.

In fact, in view of above provisions, since the applicant did not receive any written opinion during all this period, it was inferred that the Authority is in agreement with the amendments made and on Novelty, inventive step and Industrial applicability of the amended claims too.

However, the final report contains several reservations on above issues, and looking at the contents of the final International Preliminary Report on Patentability, the applicant feels that the reservations on allowing certain amendments and novelty and inventive step in certain claims could have been overcome effectively and to the satisfaction of the Hon. Authorized Officer by a combination of explanations, arguments and amendments which the applicant could have offered had the applicant been communicated these reservations through a reasoned written opinion quite early, for which sufficient time was available.

Hence, the applicant endeavors to send his response with arguments and suggested amendments with an earnest and humble request to:

1. take the applicant's response accompanying this letter on your record and consideration,
2. if possible, revise your reservations on novelty and inventive step about the amended claim nos. 24 and 25, and on allowing insertion of the extra material and claim nos. 25 to 31 as amendments as explained in more details in the accompanying statement. If there are any reservations yet, the applicant shall welcome a second written opinion and the applicant is

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ready even at this stage to interact for a conclusive result. Anyway, the applicant is constrained to move ahead for National Phase right now, and is prepared to await for final outcome of conclusive result if interaction is still possible to continue.

If the available time or any other reason does not permit consideration again, this response may please at least be kept on your record, and if possible, be sent to the countries elected so that they will know that we were under a disadvantage of not having received written opinions and that there are arguments and amendments which were eligible to be taken into consideration in the International Preliminary Examination phase but did not get due consideration and they may then take them into kind consideration in the National Phase without having an impression that the International Preliminary Report on Patentability had received all the due chance of interaction.

Please take note of attached documents on:

1. Statement of Response on Preliminary Examination on Report on Patentability.
2. Claim 24 as amended in response to the IPRP with amendment highlighted.
3. Clean copy of amended claim.

Regards.

For KRISHNA & SAURASTRI

(VASANT ANANTRAO SAVANGIKAR)

Enclosures:

1. Statement of Response on Preliminary Examination on Report on Patentability.
2. Claim 24 as amended in response to the IPRP with amendment highlighted.
3. Clean copy of amended claim.

Sk/gg/letterIPR

Statement of Response to
International Preliminary Report on Patentability
related to
PCT/IN2004/000142

With reference to International Preliminary Report on Patentability related to PCT/IN2004/000142, the applicant has humble explanations and an amendment to claim which the applicant is sure, would satisfy the Hon. Authorized Officer in waiving his objections to amended claim nos. 24 and 25 and in allowing amendment of description of the two extra figures on page 7, the extra materials of pages 23-26, new claims 26-31 and new figures 7 and 8. The applicant would have been very happy to give these explanations as soon as had the applicant received first written report of the Hon. Authorized Officer. However, whereas the applicant was entitled to receive three written at least, not a single one was received in fact. Hence, the applicant very politely requests the Authorized Officer kindly to consider this as a response to his written report no. 1 and take it in consideration and, if possible, revise the IPRP. Should this be not possible for any reason, this statement of the applicant may kindly be kept on record and sent to the elected countries.

With reference to the (Authorized Officer's) your Re Item I

Basis of the Report

With respect to your statement in para 1 that: "Amended claims 24 and 25 are considered allowable ---- or non-crystalline":

The applicant humbly states that: we welcome you having allowed the mentioned amendments.

With respect to your para 2 that "All other amendments however, being page 7 the description of the two extra figures, the extra material of pages 23-26, new claims 26-31 and new figures 7 and 8 are considered not-allowable (Rule 70.2©PCT) since in the original application there is no basis for those

amendments. There can be no basis for new figures since those figures cannot be exactly the same as text, therefore, the content of those figures cannot have been present in the original application. The new added pages as well as the new claims 26-31 are also considered to extent the scope of the original application because the addition of particle sizes was not present at all (only one remark, page 23 line 14) where it is stated that the powders have smaller particle size. However, no numbers are specified, therefore, any added number is considered unallowable added matter.":

The applicant requests to invite your attention very humbly to the following: The remark on page 23 line 14 opens the scope of all the amendments mentioned in above para. This remark as quoted from "as filed" specification is: "Solid powders obtained by ATFD and other methods of drying when compared to powders obtained from crystallization procedures were, however, amorphous in nature having smaller particle size." As per Article 34 (2)(b), "(b) The applicant shall have a right to amend the claims, the description, and the drawings, in the prescribed manner and within the prescribed time limit, before the international preliminary examination report is established. The amendment shall not go beyond the disclosure in the international application as filed." Just as amendment in claims means even insertion of new claims, provided they are within the scope of the specification, new figures can also be added in case not outside the scope of the disclosure, hence insertion of new figures nos. 7 and 8, in the sense of additional figures is compliant to provisions of PCT. Subject matter of the figure nos. 7 and 8 pertain to XRD spectra of crystalline and amorphous solid particle forms of trichlorogalactose (sucralose), whereas subject matter of the new added pages (part of page no. 23, and whole of page No. 24, 25 and page no. 26), and the new claims 26-31 either describe or are based on the properties such as particle size and XRD spectrum, which are "inherent"

fundamental physical properties of solid particles prepared by the process of claims 1 to 23. Being physical properties, they are integral part of the "particles" disclosed here, are not severable / separable from them and disclosure of these properties is "inherently" included even by mere disclosure of a mention of solid particles by the methods claimed, hence fully within the scope of disclosure of the "as filed" document. We are sure that this shall be to the satisfaction of the Hon. Authorized officer and he shall allow inclusion of all this newly added pages and claims in the specification because it is well settled principle that what is within scope of the "as filed" document, can be amended / added at the time of IPER, whether it be a description, a claim or a drawing.

With respect to your Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

With respect to your statement on Novelty in following two paragraphs that:

"The present application does not meet the criteria ..... Article 33(2) PCT."
And

"The documents D1 and D2 disclose the synthesis and isolation of sucralose, thus claims 24 and 25 lack novelty since a product by process must be new and inventive. A product is not rendered novel merely by the fact that it is produced by a new process. Moreover, both D1 and D2 disclose crystalline sucralose (D1 page 293, sucralose was obtained as a syrup; D2 column 10 line 14 as a syrup) therefore, claims 24 and 25 are considered not novel.",

The applicant humbly invites kind attention of the Hon. Authorized Officer to the fact that the reference and entire description of amorphous product on page 23 of the "as filed" specification referred to "-----Solid powders obtained by ATFD and other methods of drying when compared to powders obtained from crystallization procedures ----", and not to syrups. Thus, whereas conventionally the solid

particle "Form" known for chlorinated sucrose, particularly trichlorogalactosucrose (sucralose), is crystalline with long needles, the "as filed" as well as amended claim nos. 24 and 25 disclose a new "Form" of solid chlorinated sucrose solid particles, which, in varying proportions, is amorphous in part and microcrystalline in part with aggregate crystal size which is smaller than the conventional crystalline forms. To avoid " a syrup" also being included in this "amorphous" form claim, this applicant is prepared to make appropriate amendment in claim nos. 24 to make it clear that the claim pertains to "solid particles". This purpose shall be achieved by amendment in claim 24 as follows: "**A solid powder form of a** chlorinated sucrose, its intermediates, its derivatives of process of claim 1 to claim 23, at least part of which is amorphous or non-crystalline." This amendment gets automatically included in claims 25 and 26 through reference of claim 24 in them.

With respect to your comments on Inventive step:

The applicant is in agreement with the entire comments done by the Hon. Authorized Officer under the title "Inventive step".

With the explanations given with respect to "basis of Report" with respect to the new claims, new figures and new description being within the scope of the "as filed" application due to "inherent" reasons, we request the Authorized Officer to acknowledge Inventive step also to claim nos. 24 to 31 and Industrial applicability to claim nos. 26 to 31..

22. The process of claim 11 wherein the said impure solution is the solution of the solid powder mixture of several chemicals, including chlorinated sucrose, made in water and subjected to purification by application of separation methods including column chromatography, extraction in water immiscible solvent having selective affinity with chlorinated sucrose or chlorinated sucrose intermediates or chlorinated sucrose derivatives

23. The process of claim 11 when the said impure solution is the crude extract of chlorinated sucrose (or its intermediates or derivatives) from a solid powder mixture of several chemicals, including chlorinated sucrose; extraction being done by water and the water extract being subjected to a any suitable extraction process including to conventional extraction in any suitable solvent, including ethyl acetate, methanol, methyl ethyl ketone, acetone, which are capable of selective extraction of substantially pure form of chlorinated sucrose free from impurities.

24. **A solid powder form of a** chlorinated sucrose, its intermediates, its derivatives of process of claim 1 to claim 23, at a least part of which is amorphous or non crystalline.

25. Chlorinated sucrose, its intermediates, its derivatives of claim 24 produced by process of claim 1 to 23.

26. Chlorinated sucrose, its intermediates, its derivatives of claim 24 which comprises of :

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

SAURASTRI, Manish
Krishna & Saurastri
74/F Venus, Worli Sea Face
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COMMUNICATION REGARDING AMENDMENTS NOT TAKEN INTO ACCOUNT

(PCT Rule 66.4bis)

Date of mailing *(day/month/year)*	08-09-2006
Applicant's or agent's file reference: XXX	INFORMATION ONLY
International application No.: PCT/IN2004/000142	International filing date *(day/month/year)*: 20/05/2004

Applicant

PHARMED MEDICARE PRIVATE LIMITED

The applicant is hereby informed that the amendents under Artical 34 submitted with the letter of:

fax dated 17.08.2006

have not been taken into account by this International Preliminary Examining Authority because they were received after this Authority had started:

☐ to draw up the _____ written opinion.

If he so wishes, the applicant may submit these amendments again in response to that written opinion.

☒ to establish the international preliminary examination report.

There is no opportunity for the applicant during the international phase to submit amendments in response to the international preliminary examination report.

However, the applicant is entitled to submit amendments before each elected Office upon entry into the national phase (Article 41 and Rule 78).

For your information please find attached OJ 11/2003

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(04/09/2006)

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KUHNEN & WACKER
Patent- und Rechtsanwaltsbüro

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Dienststelle München
Erhardtstrasse 27
80469 München

October 18, 2006 MA/MA/GS
[File: 100541439.doc]

Official File No. : 04 770 659.3
Our Reference : 58/PM09K01/EP
Owner/Applicant: Pharmed Medicare Private Limited

Herewith the regional phase before the EPO is entered with amended application documents.

It is requested that this amended application documents shall form the basis for the European Examination Proceedings.

1) Correction of compounds under Rule 88 EPC:

1',6'-Dichloro-1',6'-Dideoxy-â-D-Fructo-Furanosyl-4-Chloro-4-Deoxy-á-D-Galactopyranoside ➔

1', 6'-Dichloro-1', 6'-Dideoxy-β-D-Fructo-Furanosyl-4-Chloro-4-Deoxy-α-D-Galactopyranoside

and

1', 6'-Dichloro-1',6'-Dideoxy- â -D-Fructo-Furanosyl-4-Chloro-4-Deoxy-6-acetoxy- â -D-Galactopyranoside-6-acetate ➔

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EP European Patent Attorney
ETD European Trademark and Design Attorney
EPL European Patent Litigation Diploma (CEIPI)
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BANK ACCOUNTS

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1', 6'-Dichloro-1', 6'-Dideoxy-β-D-Fructo-Furanosyl-4-Chloro-4-Deoxy-6-acetoxy-α-D-Galactopyranoside-6-acetate

The above corrections by replacements were carried out in the whole specification where appropriate.

Further, „meter square" was amended to „m^2" and „degree C" was amended to „°C" throughout the specification, as well.

2) Amended claim 19

The term "metal oxides" was replaced by "metal hydroxides".

3) Amended claim 24

Claim 24 was clarified in that by virtue of the amendment filed herewith it is unambiguously clear that the claimed subject-matter relates to a solid powder form.

4) Figures 7 and 8

The numbering of Figures 7 and 8 was reversed because the figures as filed were erroneously exchanged and it is simply obvious that former Figure 8, present Figure 7, represents the XRD spectrum of the crystalline form whereas former Figure 7, present Figure 8, represents the XRD spectrum of the amorphous form.

Patent Attorney
M. Andrew May
(Association No. 150 ☎ +49-8161 608 314)

Encs.
Amended application documents

CLAIMS

1. A process of handling solution of sucrose intermediates and derivatives, including, chlorinated sucrose, comprising:

a) removal of liquids from the said solution by direct drying, under conditions mild enough to prevent degradation or modification of chlorinated sucrose, for recovery of solids from the said liquids and the end product of such operations is a solid mass of the chemicals visibly free from the said liquid;

b) recovering the said solids, present in the said liquid either in substantially pure form or with other solid impurities;

c) the said liquids being obtained in a process of producing chlorinated sucrose, mainly 1', 6'-Dichloro-1', 6'-Dideoxy-β-D-Fructo-Furanosyl-4-Chloro-4-Deoxy-α-D-Galactopyranoside;

the said method of drying including one or a combination of, agitated thin film drying, spray drying, freeze drying and super critical extraction.

wherein the process of production of chlorinated sucrose comprises of,

i) deacylation of intermediates of chlorinated sucrose before as well as after drying of the chlorination reaction mixture by mild drying methods described above;

ii) use of alkali metal oxides as well as alkoxides, including Potassium Methoxide or Sodium Methoxide, for deacylation;

iii) achieving deacylation up to pH of 9 but well below pH 11.

2. The process of claim 1, wherein the chlorinated sucrose (or its intermediates or derivatives) containing liquid is a mixture of the respective substantially pure forms as well as of several solid ingredients of other chemicals in dissolved or suspended state.

3. The process of claim no. 2 wherein the individual ingredients of the said mixture of solids, containing chlorinated sucrose (or its intermediates or derivatives) as one of the ingredients, originate from reactants of a process undertaken for chlorination of sucrose-6-esters.

4. The process of claim no. 3 wherein the sucrose-6-ester is sucrose-6-acetate or sucrose-6-benzoate.

5. The process of claim no. 4 wherein the chlorinating reagent is any one suitable for chlorinating sucrose-6-ester.

6. The process of claim 5 wherein the said chlorinating reagent is a Vilsmeier reagent of the formula [XClC.dbd.NR.sub.2].sup.+Cl.sup.- (where R represents an alkyl groupand X represents a hydrogen atom or a methyl group].

7. The process of claim no. 3 wherein in the said process of chlorination, sequence of steps involves addition of sucrose-6-ester solution in a tertiary amide to the chlorinating reagent for chlorination.

8. The process of claim no. 7 wherein the said tertiary amide is N, N-dialkylformamide.

9. The process of claim no. 8 wherein the said N, N-dialkylformamide is dimethylformamide.

10. The process of claim 1, wherein the chlorinated sucrose containing liquid contains chlorinated sucrose in pure form with impurities in small or trace quantities.

11. The process of claim 10 wherein the said chlorinated sucrose containing liquid, is a wash solvent collected as effluent from a column chromatography of an impure solution of chlorinated sucrose.

12. The process of claim 11 wherein the said wash solvent is subjected to concentration before subjecting to drying treatment.

13. The process of claim 11 wherein the said wash solvent used for desorbtion is either a single solvent like ethyl acetate, or mixture of solvents like mixture of toluene and methanol or mixture of methanol or water & ethyl acetate.

14. The process of claim no. 11 when the said column chromatography is done by using a suitable adsorbent preferably, alumina or silica gel.

15. The process of claim 11 when the said impure solution is the crude extract of chlorinated sucrose (or its intermediates or derivatives) from a solid powder mixture of several chemicals, including chlorinated sucrose; extraction being done by any suitable extraction process including supercritical extraction or by conventional extraction in any suitable solvent including water, ethyl acetate, methanol, methyl ethyl ketone, acetone, which are capable of selective extraction of substantially pure form of chlorinated sucrose free from impurities.

16. The process of claim no 15 wherein the said solid powder mixture is the product of process of drying of reaction mixture as described in claim nos. 3 to 12.

17. The process of claim 12 wherein the concentrated extract is subjected to conventional crystallization for purification of chlorinated sugar.

18. The process of claim 3, wherein the said process of chlorination comprises of:

i) preparation of Vilsmeir reagent from Phosphorus oxy-chloride,

ii) addition of sucrose-6-ester, preferably sucrose-6-acetate, to Vilsmeier reagent at 5.degree.to 10.degree.C. and allowing reaction to complete,

iii) heating the reaction mixture to 80.degree.to100.degree.C., preferably between 90.degree.to 95.degree.C. and maintained for half to one hour,

iv) raising temperature of reaction mixture of step no. (iii) to 110.degree.C., preferably to 120.degree.to 130.degree.C. and maintained for 3-5 hours,

v) cooling the reaction mass to room temperature, cooling the reaction mass into a solution of a suitable deacylating reagent in inorganic basic solution like alkali hydroxide solution accompanied by further cooling to keep the temperature below 30.degree.to 35.degree.C.,

vi) adjusting the pH to 7 to 9.5 and preferably 8-9.

19. The process of claim18 wherein at step no. v), wherein any alkoxide, preferably Potassium Methoxide or Sodium Methoxide is used instead of alkali metal hydroxides for deacylation.

20. The process of claim no. 18 wherein pH is adjusted only upto 9 and reaction mixture is subjected to drying as per claim 1.

21. The process of claim 1 wherein the solids obtained from drying of reaction mixture from chlorination step are extracted for chlorinated sucrose recovery by any suitable method of extraction, including, solvent extraction.

22. The process of claim 11 wherein the said impure solution is the solution of the solid powder mixture of several chemicals, including chlorinated sucrose, made in water and subjected to purification by application of separation methods including column chromatography, extraction in water immiscible solvent having selective affinity with chlorinated sucrose or chlorinated sucrose intermediates or chlorinated sucrose derivatives

23. The process of claim 11 when the said impure solution is the crude extract of chlorinated sucrose (or its intermediates or derivatives) from a solid powder mixture of several chemicals, including chlorinated sucrose; extraction being done by water and the water extract being subjected to a any suitable extraction process including to conventional extraction in any suitable solvent, including ethyl acetate, methanol, methyl ethyl ketone, acetone, which are capable of selective extraction of substantially pure form of chlorinated sucrose free from impurities.

24. A solid powder form of a chlorinated sucrose, its intermediates, its derivatives of process of claim 1 to claim 23, at a least part of which is amorphous or non crystalline.

25. Chlorinated sucrose, its intermediates, its derivatives of claim 24 produced by process of claim 1 to 23.

26. Chlorinated sucrose, its intermediates, its derivatives of claim 24 which comprises of :

i) average particle size of 8 micron or less, within a range of 5 micron to 8 micron.

ii) residual moisture content of 10% or less, more particularly less than 5%, still more particularly less than 0.5%.

27. Chlorinated sucrose, its intermediates, its derivatives of chlorinated sucrose, its intermediates, its derivatives, at least a portion of which comprises of particles less than 20 micron precipitated as microcrystalline particles directly from a process of crystallization.

28. Chlorinated sucrose, its intermediates, its derivatives of claim 27 produced by process of claim 1 to 23.

29. Chlorinated sucrose, its intermediates, its derivatives of claim 27 which comprises of:

i) average particle size distribution of 12 micron or less, majority of particles being within a range of 8 micron to 10 micron

ii) various shapes ranging from globular particles to fully crystallized needles

iii) residual moisture content of 10 % or less, more particularly less than 0.5%, still more particularly less than 0.3%

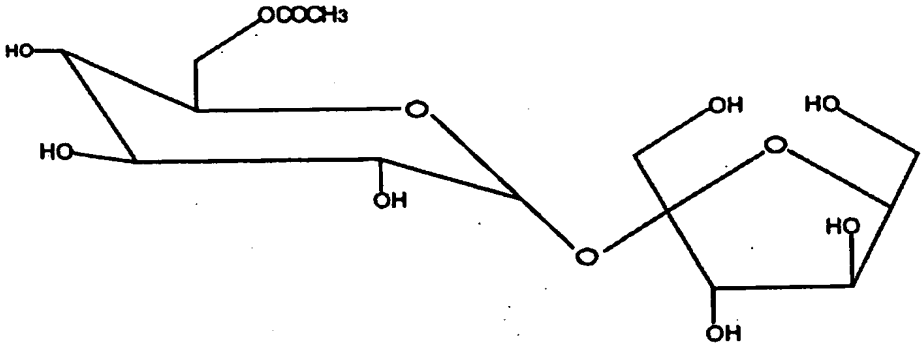
30. Chlorinated sucrose, its intermediates, its derivatives at least a part of which consists of amorphous or non crystalline or of particles less than 20

micron microcrystalline particles produced directly from a process of crystallization.

31. An oral composition, ingestible as well as non-ingestible including a toothpaste and a chewing gum, a food, a beverage; high intensity sweetener composition; in solid, semi-solid or liquid form, to which is added a composition of chlorinated sucrose of one or more of claim 24, claim 25, claim 26, claim 27, claim 28, claim 29, and claim 30.

ABSTRACT

Present invention relates to disclosure of application of some innovative techniques useful for substantially improving process efficiency of production of chlorinated sucrose including their intermediates and derivatives. Application of mild methods of drying has been made for recovery of chlorinated sucrose or their intermediates and derivatives, in substantially pure form or with other solid chemical impurities, obtained at various stages in the process of production of chlorinated sucrose. Mild methods of drying included agitated thin film drying, spray drying, freeze drying and super critical extraction. Use of alkoxides has been introduced for deacylation instead of alkali hydroxides or alkaline earth hydroxides. Deacylation has been shown to be effective both, either before or after drying of the reaction mixture. Extraction and purification of desired products i.e. of chlorinated sucrose or its intermediates or derivatives, from dried solid mixtures could be achieved by using appropriate extraction method, including but not limited to solvent extraction and super critical extraction. Further purification of such extracts can be done by crystallization or direct drying under mild conditions.

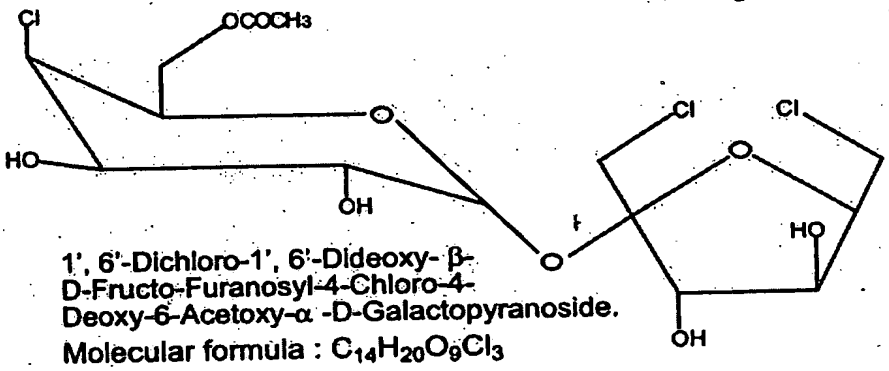


$POCl_3$ +DMF
115°C

Chlorination

Sucrose - 6 - Acetate

Molecular weight : 384

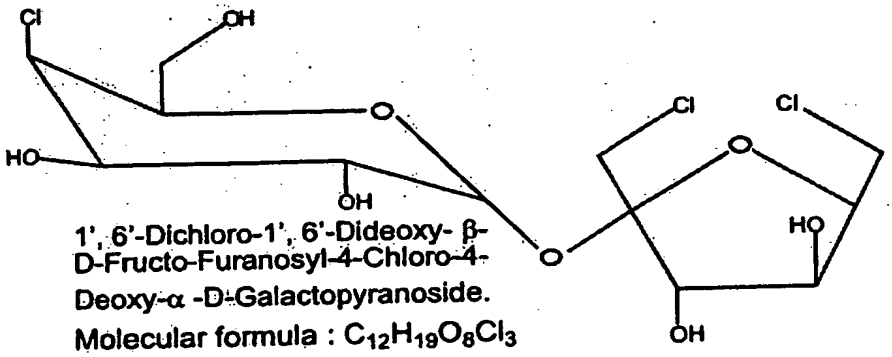


De Acetylation

1', 6'-Dichloro-1', 6'-Dideoxy- β-D-Fructo-Furanosyl-4-Chloro-4-Deoxy-6-Acetoxy-α -D-Galactopyranoside.

Molecular formula : $C_{14}H_{20}O_9Cl_3$

Molecular weight : 439.5



1', 6'-Dichloro-1', 6'-Dideoxy- β-D-Fructo-Furanosyl-4-Chloro-4-Deoxy-α -D-Galactopyranoside.

Molecular formula : $C_{12}H_{19}O_8Cl_3$

Molecular weight : 397.64

FIG 1

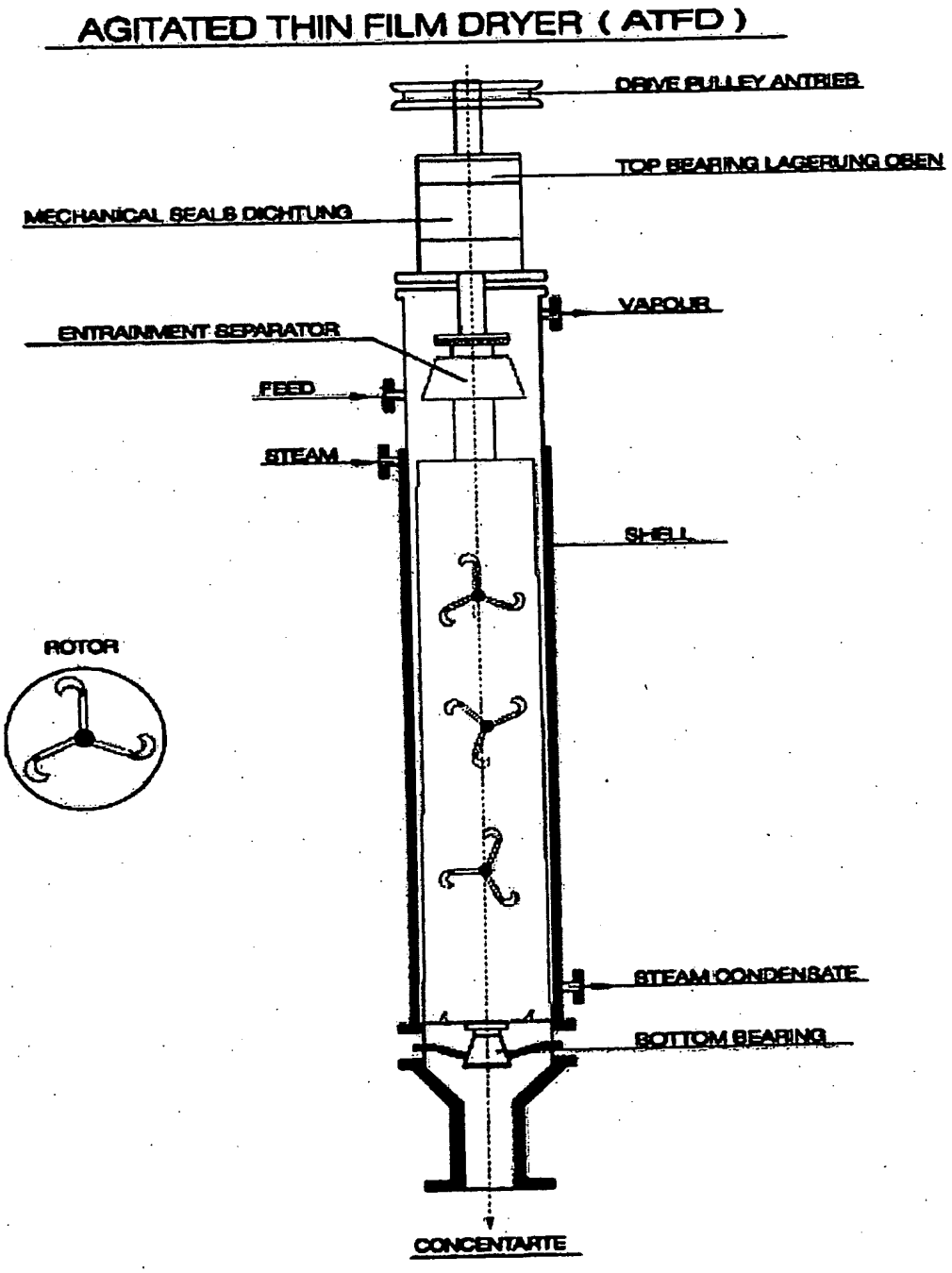

AGITATED THIN FILM DRYER (ATFD)
DRIVE PULLEY ANTRIEB
TOP BEARING LAGERUNG OBEN
MECHANICAL SEALS DICHTUNG
VAPOUR
ENTRAINMENT SEPARATOR
FEED
STEAM
SHELL
ROTOR
STEAM CONDENSATE
BOTTOM BEARING
CONCENTARTE

FIG 2

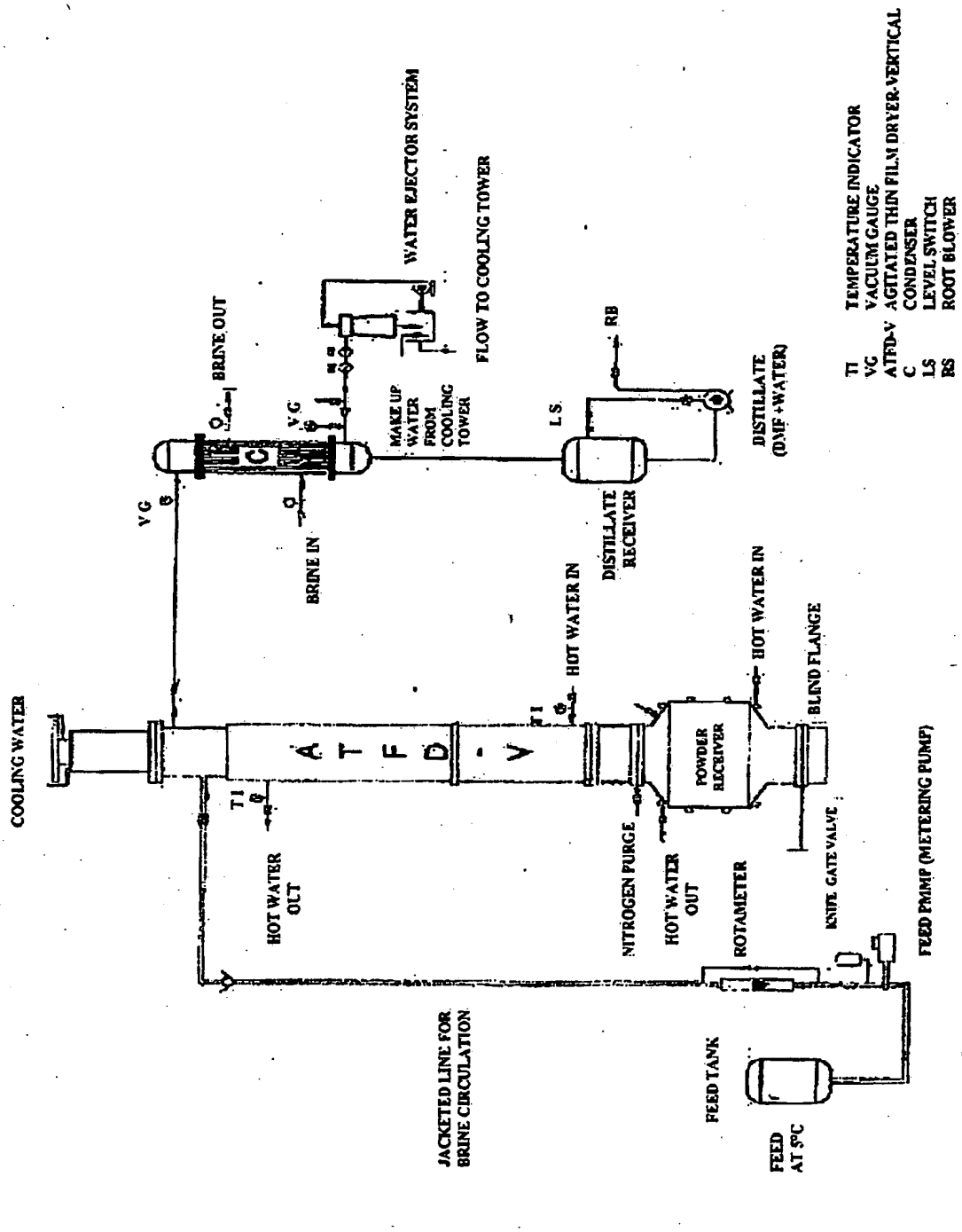

TI TEMPERATURE INDICATOR
VG VACUUM GAUGE
ATFD-V AGITATED THIN FILM DRYER-VERTICAL
C CONDENSER
LS LEVEL SWITCH
RS ROOT BLOWER
WATER EJECTOR SYSTEM
FLOW TO COOLING TOWER
BRINE OUT
MAKE UP WATER FROM COOLING TOWER
VG
LS
RB
DISTILLATE (DMF+WATER)
VG
BRINE IN
DISTILLATE RECEIVER
COOLING WATER
HOT WATER IN
HOT WATER IN
BLIND FLANGE
TI
TI
HOT WATER OUT
NITROGEN PURGE
HOT WATER OUT
ROTAMETER
KNIFE GATE VALVE
FEED PUMP (METERING PUMP)
JACKETED LINE FOR BRINE CIRCULATION
FEED TANK
FEED AT 5°C
CLIENT: PHARMED MEDICARE

Fig 3

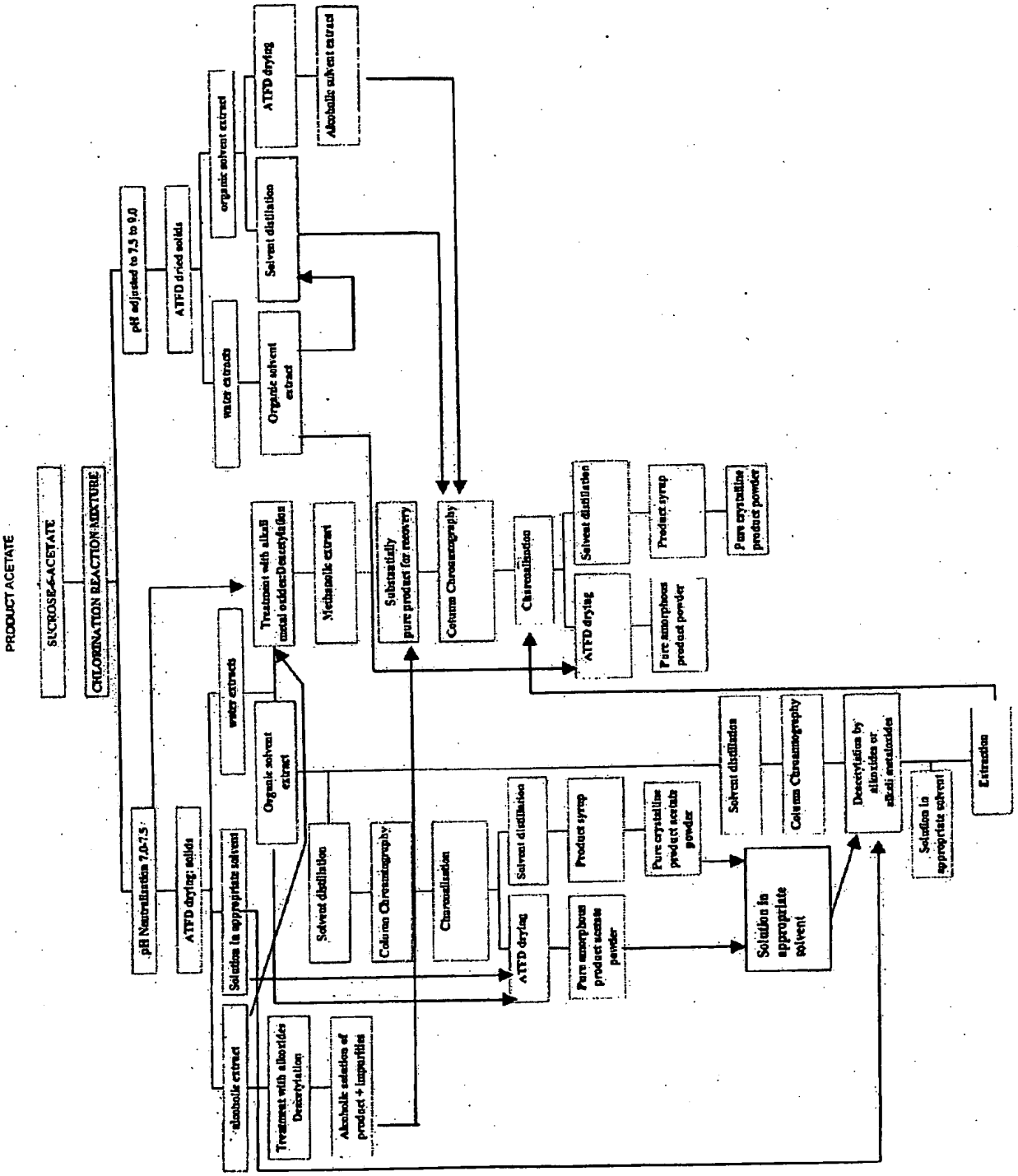

PRODUCT ACETATE
SUCROSE-6-ACETATE
CHLORINATION REACTION MIXTURE
pH adjusted to 7.5 to 9.0
ATFD dried solids
organic solvent extract
ATFD drying
Alcoholic solvent extract
water extracts
Organic solvent extract
Solvent distillation
pH Neutralisation 7.0-7.5
ATFD drying: solids
Solution in appropriate solvent
water extracts
Treatment with alkali metal oxides/Deacetylation
Methanolic extract
Substantially pure product for recovery
Column Chromatography
Charcoalisation
Solvent distillation
Product syrup
Pure crystalline product powder
ATFD drying
Pure amorphous product powder
Organic solvent extract
Solvent distillation
Column Chromatography
Charcoalisation
Solvent distillation
Product syrup
Pure crystalline product acetate powder
ATFD drying
Pure amorphous product acetate powder
Solvent distillation
Column Chromatography
Deacetylation by alkoxides or alkali metalates
Solution in appropriate solvent
Extraction
Solution in appropriate solvent
Treatment with alkoxides Deacetylation
Alcoholic solution of product + impurities
alcoholic extract

Fig 4

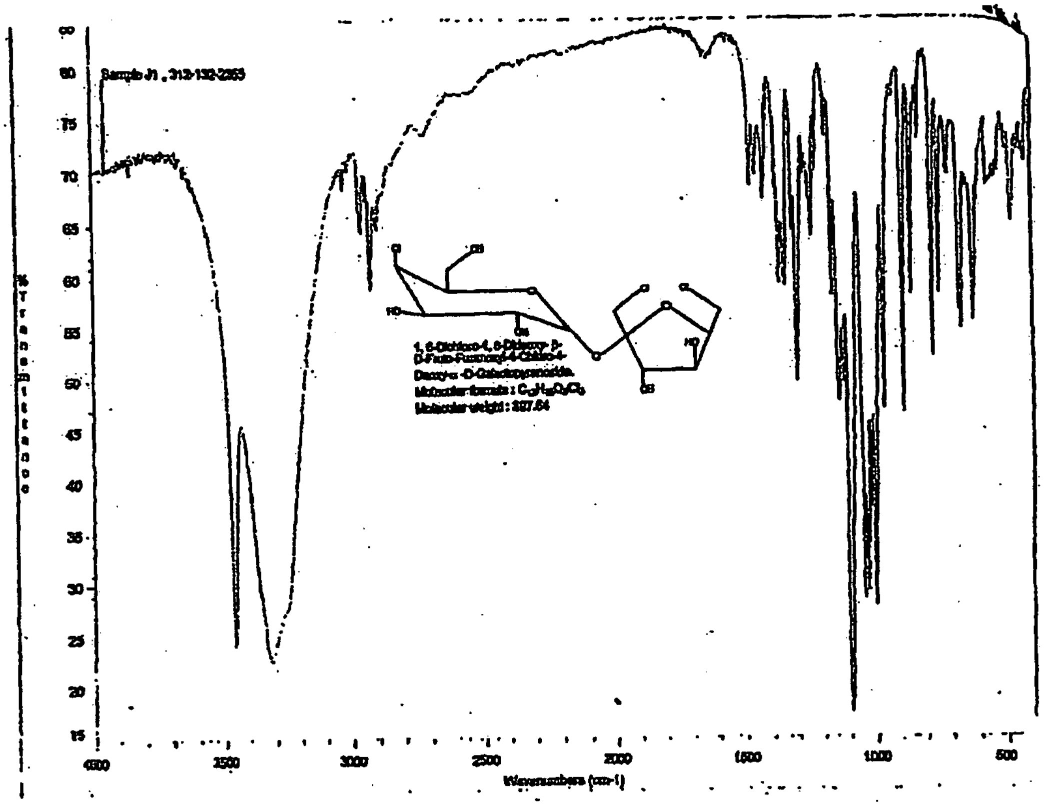
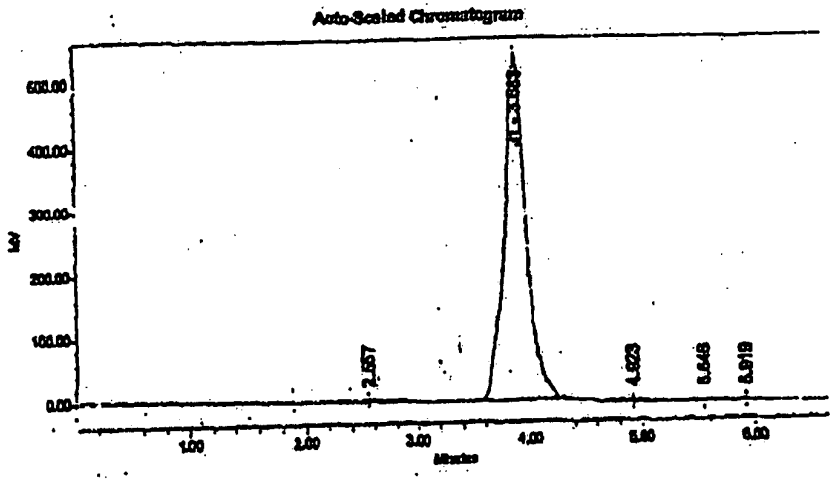

%
Transmittance
80
75
70
65
60
55
50
45
40
35
30
25
20
15
4000
3500
3000
2500
2000
1500
1000
500
Wavenumbers (cm-1)

Fig 5

SampleName	1', 6'-Dichloro-1', 6'-Dideoxy- b- D-Fructo-Furanosyl-4-Chloro-4- Deoxy-a -D-Galactopyranoside.
Vial	1
Injection	4
Injection Volume	10.00 ul
Channel	410
Run Time	8.0 Minutes

Sample Type	Sample
Data Acquired	1/8/04 10:10:03 AM
Acq Method Set	PHARMED_MTH
Processing Method	PHARMED PRO
Date Processed	



Peak Results

	Peak Name	RT	Area	Height	% Area	% Height	Id Type
1		2.557	36707	2450	0.51	0.45	BB
2	J1	3.883	7130944	539348	98.35	98.87	bb
3		4.923	59512	1928	0.82	0.35	BB
4		5.546	9102	833	0.13	0.15	BB
5		5.919	14342	948	0.20	0.17	BB

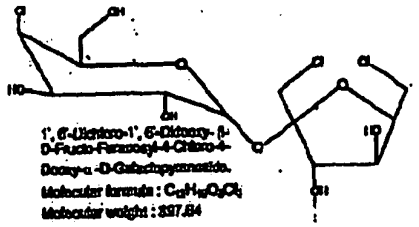


Fig. 6

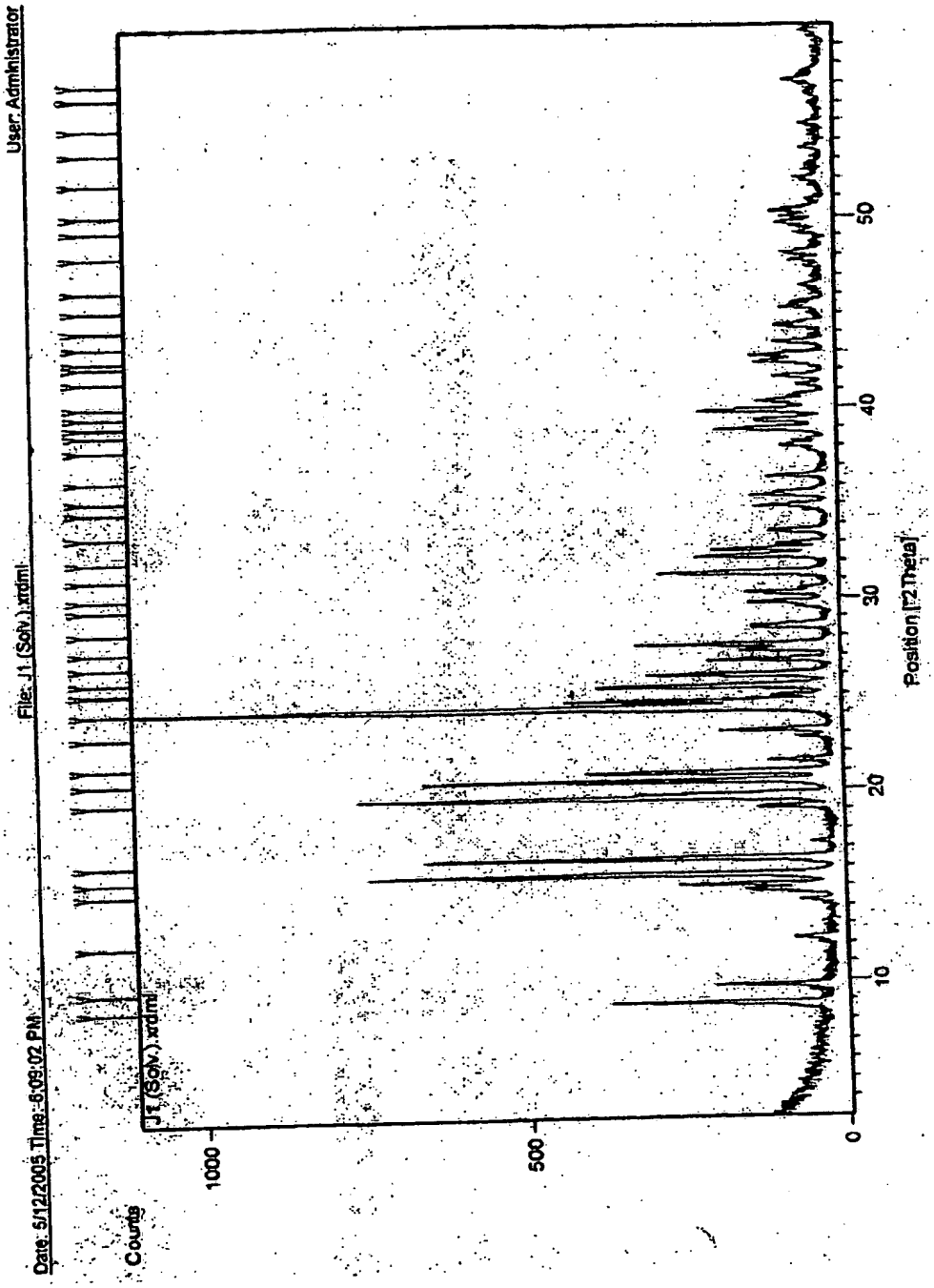

Date: 5/12/2005 Time: 6:09:02 PM
File: J1 (Sol'v).xrdml
User: Administrator
J1 (Sol'v).xrdml
Counts
1000
500
0
10
20
30
40
50
Position [°2Theta]

Fig. 7

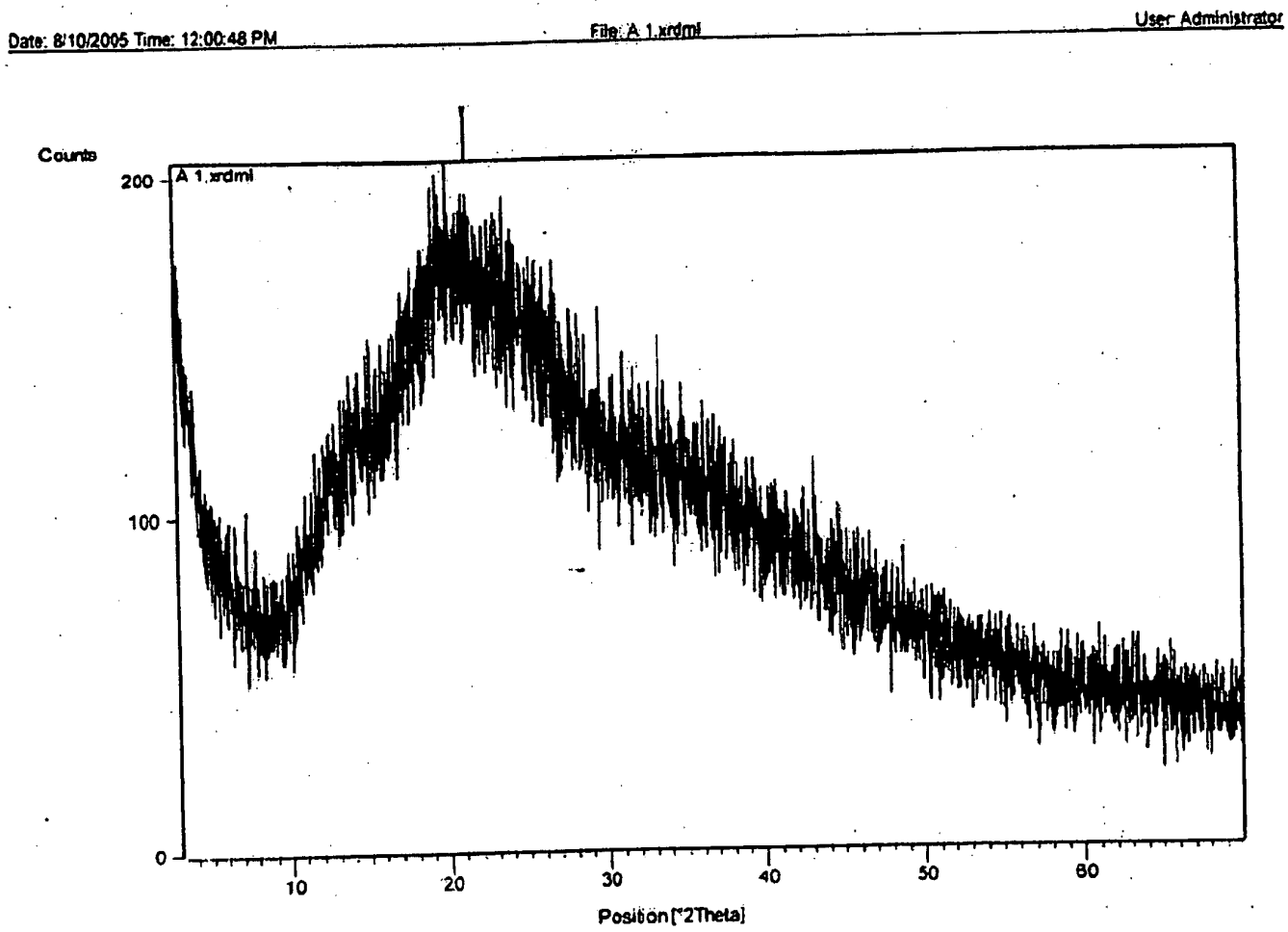

Date: 8/10/2005 Time: 12:00:48 PM
File: A 1.xrdml
User: Administrator
Counts
A 1.xrdml
200
100
0
10
20
30
40
50
60
Position [°2Theta]

Fig. 8